P A T E N T C L A I M S

1. Method for determining the content of a conductive component of a multi phase flow, in a fluid transporting body such as a pipe, characterized in on line measuring the fraction of the conductive component in the multi phase flow by using a coil design optimised for non-conductive continous mixtures, and a coil optimised for conductive continous mixtures mixtures.

2. Method according to claim 1, characterized in measuring the induced loss which is dependent on the the conductivity of the conducive phase component.

3. Method according to claim 1-2, characterized in the two coils operating at two different frequencies in order to compensate for variation in the conductivity, hence determining said conductivity of the conductive phase.

4. Method according to claim 1-3, characterized in using a coil winding which arranged of a cable of separately insulated conductive wire or cords.

5. Method according to claim 1-4, characterized in using wire or cords includes Cu-lices having a radius less than the electrical skin depth of Cu (copper).

6. Method according to any of preceding claims, characterized in using flat Cu-cords at a thickness of 40 Tm.

7. Method according to any of preceding claims, characterized in using a resonance frequency in the range of 1-10, and preferably in the range of 2 to 8 MHz.

8. Method according to any of preceding claims, characterized in using a resonance frequensy of 5,5 Mhz in order to obtaining a penetration depth of about 10 cm.

9. Method according to any of preceding claims, characterized in using a multi turn coil, e.g. a 9-turn coil, which is sensitive for conductive liquid content (such as water) in the mixture over the whole range.

10. Method according to any of preceding claims, characterized in using a number of coils arranged to the outside surface of the fluid transporting body, such as pipe, the coils being arranged to be driven to reconance frequency.

11. Method according to any of preceding claims, characterized in determining the power loss generated in the alternating magnetic field from one coil at the time.

12. Method according to any of preceding claims, characterized in working out a reconstruction algorithm imaging the water distribution in the meter cross section based on mathematical models of the magnetic field from the coils.

13. Method according to any of preceding claims, characterized in exciting one of the coils at a time and use all the other coils as pick up coils and detect the attenuation of the magnetic field from the transmitter to the receiver coils and thus reconstruct a picture of the area of low field penetration being areas of water.

14. Arrangement of determining water content in multi phase flows in a fluid transporting body, characterized by a coil design optimised for non-conductive continous mixtures, and a coil optimised for conductive continous mixtures mixtures.

15. Arrangement according to claim 14, characterized by a number of coils arranged to the outside surface of the

fluid transporting body (such as a pipe), the coils being arranged to be driven to reconance frequency.

16. Arrangement according to claim 14, characterized by a multi turn coil, e.g. a 9-turn coil, which is sensitive for water content in the mixture over the whole range.

17. Arrangement according to any of preceding claims, characterized by a number of coils arranged to the outside surface of the fluid transporting body, such as pipe, the coils being arranged to be driven to reconance frequency.

18. Arrangement according to any of preceding claims, characterized in determining the power loss generated in the alternating magnetic field from one coil at the time.

19. Arrangement according to any of preceding claims, characterized by a reconstruction algorithm imaging the water distribution in the meter cross section based on mathematical models of the magnetic field from the coils.

20. Arrangement according to any of preceding claims, characterized in being enabled to exciting one of the coils at a time and use all the other coils as pick up coils and detect the attenuation of the magnetic field from the transmitter to the receiver coils and thus reconstruct a picture of the area of low field penetration being areas of water.

21. Application of the method and arrangement according to preceding claims, for determining the water content of a multi phase flow of oil, hydrocarbon gas and water, in that water is the conductive component to be determined and the oil and gas phases being the non-conductive phase.

22. Application of the method and arrangement according to claims 10-13, for measuring water content in oil/gas/water multiphase mixture flows wherein the different phases in the crude are separated, i.e. not homogeneous mixed.